SEQUENCE LISTING

<110> MURPHY, JOHN R.
O'LEAR, EDWARD
HARRISON, ROBERT J.

<120> VACCINE COMPOSITIONS

<130> AMSC 3.3-001 CONT

<140> 10/822,953
<141> 2004-04-12

<150> 09/868,753
<151> 2001-06-21

<150> PCT/US00/29231
<151> 2000-10-23

<150> 60/161,292
<151> 1999-10-25

<150> 60/161,193
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<170> PatentIn Ver. 3.2

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accagatctg ccgaaaaact tcga 24

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<223> Description of Artificial Sequence: Primer

<400> 2
accagatctc cgcctttagt attta 25

<210> 3
<211> 27
<212> DNA
<213> Unknown Organism

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<223> Description of Unknown Organism: Native tox operator

<400> 3
ataattagga tagctttacc taattat 27

<210> 4
<211> 19
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<220>
<223> Description of Unknown Organism: Illustrative polynucleotide target site

<400> 4
gtaggttagg ctaacctat 19

<210> 5
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<223> Description of Artificial Sequence: Consensus-binding sequence

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<400> 5
ananttaggn tagnctannc tnnnn 25

<210> 6
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<220>
<223> Description of Artificial Sequence: Illustrative variant polynucleotide sequence

<400> 6
twaggttags ctaacctwa 19

<210> 7
<211> 230
<212> PRT
<213> Mycobacterium tuberculosis

<400> 7

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Asp	Leu	Glu	Glu	Glu	Gly	Val	Thr	Pro	Leu	Arg	Ala	Arg	Ile	Ala	Glu
		20					25						30		
Arg	Leu	Asp	Gln	Ser	Gly	Pro	Thr	Val	Ser	Gln	Thr	Val	Ser	Arg	Met
	35					40						45			
Glu	Arg	Asp	Gly	Leu	Leu	Arg	Val	Ala	Gly	Asp	Arg	His	Leu	Glu	Leu
50					55					60					
Thr	Glu	Lys	Gly	Arg	Ala	Leu	Ala	Ile	Ala	Val	Met	Arg	Lys	His	Arg
65				70					75						80
Leu	Ala	Glu	Arg	Leu	Leu	Val	Asp	Val	Ile	Gly	Leu	Pro	Trp	Glu	Glu
			85					90						95	
Val	His	Ala	Glu	Ala	Cys	Arg	Trp	Glu	His	Val	Asn	Ser	Glu	Asp	Val
		100					105					110			
Glu	Arg	Arg	Leu	Val	Lys	Val	Leu	Asn	Asn	Pro	Thr	Thr	Ser	Pro	Phe
	115					120					125				
Gly	Asn	Pro	Ile	Pro	Gly	Leu	Val	Glu	Leu	Gly	Val	Gly	Pro	Glu	Pro
130					135					140					
Gly	Ala	Asp	Asp	Ala	Asn	Leu	Val	Arg	Leu	Thr	Glu	Leu	Pro	Ala	Gly
145				150					155						160

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Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
                165                 170                 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
            180                 185                 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val
        195                 200                 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
    210                 215                 220

Val Lys Val Glu Lys Val
225                 230
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<210> 8
<211> 223
<212> PRT
<213> Cornyebacterium diptheriae

<400> 8

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Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
  1               5                  10                  15

Glu Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
             20                  25                  30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
         35                  40                  45

Glu Arg Asp Gly Leu Val Val Val Ala Ser Asp Ser Leu Gln Met Thr
     50                  55                  60

Pro Thr Gly Arg Thr Leu Ala Thr Ala Val Met Arg Lys His Arg Leu
 65                  70                  75                  80

Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile Asn Lys Val
                 85                  90                  95

His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val Glu
            100                 105                 110

Arg Arg Leu Val Lys Val Lys Asp Val Ser Arg Ser Pro Phe Gly Asn
        115                 120                 125

Pro Ile Pro Gly Leu Asp Glu Leu Gly Val Gly Asn Ser Asp Ala Ala
    130                 135                 140

Ala Pro Gly Thr Arg Val Ile Asp Ala Ala Thr Ser Met Pro Arg Lys
145                 150                 155                 160

Val Arg Ile Val Gln Ile Asn Glu Ile Phe Gln Val Glu Thr Asp Gln
                165                 170                 175
```

```
Phe Gln Leu Leu Asp Ala Asp Ile Arg Val Gly Ser Glu Val Glu Ile
            180                 185                 190

Val Asp Arg Asp Gly His Ile Thr Leu Ser His Asn Gly Lys Asp Val
        195                 200                 205

Glu Leu Leu Asp Asp Leu Ala His Thr Ile Arg Ile Glu Glu Leu
    210                 215                 220
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<210> 9
<211> 174
<212> PRT
<213> Staphylococcus epidermitis

<400> 9

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Met Thr Val Ser Cys Pro Pro Pro Ser Thr Ser Glu Arg Glu Glu Gln
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Ala Arg Ala Leu Cys Leu Arg Leu Leu Thr Ala Arg Ser Arg Thr Arg
             20                  25                  30

Ala Glu Leu Ala Gly Gln Leu Ala Lys Arg Gly Tyr Pro Glu Asp Ile
         35                  40                  45

Gly Asn Arg Val Leu Asp Arg Leu Ala Ala Val Gly Leu Val Asp Asp
     50                  55                  60

Thr Asp Phe Ala Glu Gln Trp Val Gln Ser Arg Arg Ala Asn Ala Ala
 65                  70                  75                  80

Lys Ser Lys Arg Ala Leu Ala Ala Glu Leu His Ala Lys Gly Val Asp
                 85                  90                  95

Asp Asp Val Ile Thr Thr Val Leu Gly Gly Ile Asp Ala Gly Ala Glu
            100                 105                 110

Arg Gly Arg Ala Glu Lys Leu Val Arg Ala Arg Leu Arg Arg Glu Val
        115                 120                 125

Leu Ile Asp Asp Gly Thr Asp Glu Ala Arg Val Ser Arg Arg Leu Val
    130                 135                 140

Ala Met Leu Ala Arg Arg Gly Tyr Gly Gln Thr Leu Ala Cys Glu Val
145                 150                 155                 160

Val Ile Ala Glu Leu Ala Ala Glu Arg Glu Arg Arg Arg Val
                165                 170
```

<210> 10
<211> 225
<212> PRT
<213> Mycobacterium leprae

<400> 10
Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Asp Leu Glu Glu Glu Gly Ile Val Thr Pro Leu Arg Ala Arg Ile Ala
20 25 30

Glu Arg Pro Thr Val Ser Gln Thr Val Ser Arg Met Glu Arg Asp Gly
35 40 45

Leu Leu Arg Val Ala Gly Asn Arg His Leu Glu Leu Thr Thr Lys Gly
50 55 60

Arg Ala Met Ala Ile Ala Val Met Arg Lys His Arg Leu Ala Glu Arg
65 70 75 80

Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu Val His Ala Glu
85 90 95

Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val Glu Arg Arg Leu
100 105 110

Ile Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe Gly Asn Pro Ile
115 120 125

Pro Gly Leu Leu Asp Leu Gly Ala Gly Pro Asp Ala Ser Ala Ala Asn
130 135 140

Ala Lys Leu Val Arg Leu Thr Glu Leu Pro Ser Gly Ser Pro Val Ala
145 150 155 160

Val Val Val Arg Gln Leu Thr Glu His Val Asp Asp Ile Asp Leu Ile
165 170 175

Thr Arg Leu Lys Asp Thr Gly Val Val Pro Asn Ala Arg Val Thr Val
180 185 190

Glu Thr Ser Pro Ala Gly Asn Val Ile Ile Ile Ile Pro Gly His Glu
195 200 205

Asn Val Thr Leu Pro His Glu Met Ala His Ala Val Lys Val Glu Lys
210 215 220

Val
225

<210> 11
<211> 230
<212> PRT
<213> Mycobacterium tuberculosis

<400> 11
Met Asn Glu Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

```
Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
             20                  25                  30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
         35                  40                  45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu
     50                  55                  60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg
 65                  70                  75                  80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu
                 85                  90                  95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val
            100                 105                 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe
        115                 120                 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro
    130                 135                 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly
145                 150                 155                 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
                165                 170                 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
            180                 185                 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val
        195                 200                 205

Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
    210                 215                 220

Val Lys Val Glu Lys Val
225                 230
```

<210> 12
<211> 233
<212> PRT
<213> Mycobacterium smegmatis

<400> 12

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Met Asn Asp Leu Val Asp Thr Thr Glu Asn Tyr Leu Arg Thr Ile Tyr
  1               5                  10                  15

Asp Leu Glu Glu Glu Gly Val Val Pro Leu Arg Ala Arg Ile Ala Glu
             20                  25                  30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
         35                  40                  45
```

```
Glu Arg Asp Gly Leu Leu His Val Ala Gly Asp Arg His Leu Glu Leu
     50                  55                  60

Thr Asp Lys Gly Arg Ala Leu Ala Val Ala Val Met Arg Lys His Arg
 65                  70                  75                  80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Asp
                 85                  90                  95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Glu Val
            100                 105                 110

Glu Arg Arg Leu Val Gln Val Leu Glu Asn Pro Thr Thr Ser Pro Phe
        115                 120                 125

Gly Asn Pro Ile Pro Gly Leu Thr Glu Leu Ala Val Thr Pro Gly Val
    130                 135                 140

Asn Thr Glu Asp Val Ser Leu Val Arg Leu Thr Glu Leu Pro Val Gly
145                 150                 155                 160

Met Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
                165                 170                 175

Asp Thr Asp Leu Ile Gly Arg Leu Lys Glu Ala Gly Val Val Pro Asn
            180                 185                 190

Ala Arg Val Thr Val Glu Ala Asn Asn Asn Gly Gly Val Met Ile Val
        195                 200                 205

Ile Pro Gly His Glu Gln Val Glu Leu Pro His His Met Ala His Ala
    210                 215                 220

Val Lys Val Glu Lys Val Glu Lys Val
225                 230
```

<210> 13
<211> 174
<212> PRT
<213> Mycobacterium tuberculosis

<400> 13

```
Met Thr Val Ser Cys Pro Pro Pro Ser Thr Ser Glu Arg Glu Glu Gln
  1               5                  10                  15

Ala Arg Ala Leu Cys Leu Arg Leu Leu Thr Ala Arg Ser Arg Thr Arg
            20                  25                  30

Ala Glu Leu Ala Gly Gln Leu Ala Lys Arg Gly Tyr Pro Glu Asp Ile
        35                  40                  45

Gly Asn Arg Val Leu Asp Arg Leu Ala Ala Val Gly Leu Val Asp Asp
    50                  55                  60
```

```
Thr Asp Phe Ala Glu Gln Trp Val Gln Ser Arg Arg Ala Asn Ala Ala
 65                  70                  75                  80

Lys Ser Lys Arg Ala Leu Ala Ala Glu Leu His Ala Lys Gly Val Asp
                 85                  90                  95

Asp Asp Val Ile Thr Thr Val Leu Gly Gly Ile Asp Ala Gly Ala Glu
            100                 105                 110

Arg Gly Arg Ala Glu Lys Leu Val Arg Ala Arg Leu Arg Arg Glu Val
        115                 120                 125

Leu Ile Asp Asp Gly Thr Asp Glu Ala Arg Val Ser Arg Arg Leu Val
    130                 135                 140

Ala Met Leu Ala Arg Arg Gly Tyr Gly Gln Thr Leu Ala Cys Glu Val
145                 150                 155                 160

Val Ile Ala Glu Leu Ala Ala Glu Arg Glu Arg Arg Arg Val
                165                 170
```

<210> 14
<211> 228
<212> PRT
<213> Brevibacterium lactofermentum

<400> 14

```
Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
  1               5                  10                  15

Glu Leu Glu Glu Glu Gly Ile Val Pro Leu Arg Ala Arg Ile Ala Glu
             20                  25                  30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
         35                  40                  45

Glu Arg Asp Gly Leu Val His Val Ser Pro Asp Arg Ser Leu Glu Met
     50                  55                  60

Thr Pro Glu Gly Arg Ser Leu Ala Ile Ala Val Met Arg Asn Asp Arg
 65                  70                  75                  80

Leu Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile His Lys
                 85                  90                  95

Val His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val
            100                 105                 110

Glu Arg Arg Leu Val Glu Val Leu Asp Asp Val His Arg Ser Pro Phe
        115                 120                 125

Gly Asn Pro Ile Pro Gly Leu Gly Glu Ile Gly Leu Asp Gln Ala Asp
    130                 135                 140

Glu Pro Asp Ser Gly Val Arg Ala Ile Asp Leu Pro Leu Gly Glu Asn
145                 150                 155                 160
```

Leu Lys Ala Arg Ile Val Gln Leu Asn Glu Ile Leu Gln Val Asp Leu
165 170 175

Glu Gln Phe Gln Ala Leu Thr Asp Ala Gly Val Glu Ile Gly Thr Glu
180 185 190

Val Asp Ile Ile Asn Glu Gln Gly Arg Val Val Ile Thr His Asn Gly
195 200 205

Ser Ser Val Glu Leu Ile Asp Asp Leu Ala His Ala Val Arg Val Glu
210 215 220

Lys Val Glu Gly
225

<210> 15
<211> 226
<212> PRT
<213> Corynebacterium diphtheriae

<400> 15
Met Lys Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
1 5 10 15

Glu Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Glu Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
35 40 45

Glu Arg Asp Gly Leu Val Val Val Ala Ser Asp Arg Ser Leu Gln Met
50 55 60

Thr Pro Thr Gly Arg Thr Leu Ala Thr Ala Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Arg Leu Leu Thr Asp Ile Ile Gly Leu Asp Ile Asn Lys
85 90 95

Val His Asp Glu Ala Cys Arg Trp Glu His Val Met Ser Asp Glu Val
100 105 110

Glu Arg Arg Leu Val Lys Val Leu Lys Asp Val Ser Arg Ser Pro Phe
115 120 125

Gly Asn Pro Ile Pro Gly Leu Asp Glu Leu Gly Val Gly Asn Ser Asp
130 135 140

Ala Ala Ala Pro Gly Thr Arg Val Ile Asp Ala Ala Thr Ser Met Pro
145 150 155 160

Arg Lys Val Arg Ile Val Gln Ile Asn Glu Ile Phe Gln Val Glu Thr
165 170 175

```
Asp Gln Phe Thr Gln Leu Leu Asp Ala Asp Ile Arg Val Gly Ser Glu
            180                 185                 190

Val Glu Ile Val Asp Arg Asp Gly His Ile Thr Leu Ser His Asn Gly
        195                 200                 205

Lys Asp Val Glu Leu Leu Asp Asp Leu Ala His Thr Ile Arg Ile Glu
    210                 215                 220

Glu Leu
225
```

<210> 16
<211> 230
<212> PRT
<213> Mycobacterium tuberculosis

<400> 16

```
Met Asn Glu Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
  1               5                  10                  15

Asp Leu Glu Glu Glu Gly Val Thr Pro Leu Arg Ala Arg Ile Ala Glu
            20                  25                  30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
        35                  40                  45

Glu Arg Asp Gly Leu Leu Arg Val Ala Gly Asp Arg His Leu Glu Leu
    50                  55                  60

Thr Glu Lys Gly Arg Ala Leu Ala Ile Ala Val Met Arg Lys His Arg
65                  70                  75                  80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu
                85                  90                  95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val
            100                 105                 110

Glu Arg Arg Leu Val Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe
        115                 120                 125

Gly Asn Pro Ile Pro Gly Leu Val Glu Leu Gly Val Gly Pro Glu Pro
    130                 135                 140

Gly Ala Asp Asp Ala Asn Leu Val Arg Leu Thr Glu Leu Pro Ala Gly
145                 150                 155                 160

Ser Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
                165                 170                 175

Asp Ile Asp Leu Ile Thr Arg Leu Lys Asp Ala Gly Val Val Pro Asn
            180                 185                 190

Ala Arg Val Thr Val Glu Thr Thr Pro Gly Gly Gly Val Thr Ile Val
        195                 200                 205
```

```
Ile Pro Gly His Glu Asn Val Thr Leu Pro His Glu Met Ala His Ala
    210                 215                 220

Val Lys Val Glu Lys Val
225                 230


<210> 17
<211> 235
<212> PRT
<213> Mycobacterium smegmatis

<400> 17
Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
  1               5                  10                  15

Asp Leu Glu Glu Glu Gly Val Val Pro Leu Arg Ala Arg Ile Ala Glu
            20                  25                  30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ser Arg Met
        35                  40                  45

Glu Arg Asp Gly Leu Leu His Val Ala Gly Asp Arg His Leu Glu Leu
    50                  55                  60

Thr Asp Lys Gly Arg Ala Leu Ala Val Ala Val Met Arg Lys His Arg
65                  70                  75                  80

Leu Ala Glu Arg Leu Leu Val Asp Val Ile Leu Pro Trp Glu Asp Gly
                85                  90                  95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Glu Val
            100                 105                 110

Glu Arg Arg Leu Val Gln Val Leu Glu Asn Pro Thr Thr Ser Pro Phe
        115                 120                 125

Gly Asn Pro Ile Pro Gly Leu Thr Glu Leu Ala Val Thr Pro Gly Val
    130                 135                 140

Asn Thr Glu Asp Val Ser Leu Val Arg Leu Thr Glu Leu Pro Val Gly
145                 150                 155                 160

Met Pro Val Ala Val Val Val Arg Gln Leu Thr Glu His Val Gln Gly
                165                 170                 175

Asp Thr Asp Leu Ile Gly Arg Leu Lys Glu Ala Gly Val Val Pro Asn
            180                 185                 190

Ala Arg Val Thr Val Glu Ala Asn Asn Asn Gly Gly Val Met Ile Val
        195                 200                 205

Ile Pro Gly His Glu Gln Val Glu Leu Pro His His Met Ala His Ala
    210                 215                 220
```

```
Val Lys Lys Lys Val Glu Lys Val Glu Lys Val
225                 230                 235


<210> 18
<211> 225
<212> PRT
<213> Mycobacterium leprae

<400> 18
Met Asn Asp Leu Val Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Tyr
  1               5                  10                  15

Asp Leu Glu Glu Glu Gly Ile Val Thr Pro Leu Arg Ala Arg Ile Ala
             20                  25                  30

Glu Arg Pro Thr Val Ser Gln Thr Val Ser Arg Met Glu Arg Asp Gly
         35                  40                  45

Leu Leu Arg Val Ala Gly Asn Arg His Leu Glu Leu Thr Thr Lys Gly
     50                  55                  60

Arg Ala Met Ala Ile Ala Val Met Arg Lys His Arg Leu Ala Glu Arg
 65                  70                  75                  80

Leu Leu Val Asp Val Ile Gly Leu Pro Trp Glu Glu Val His Ala Glu
                 85                  90                  95

Ala Cys Arg Trp Glu His Val Met Ser Glu Asp Val Glu Arg Arg Leu
            100                 105                 110

Ile Lys Val Leu Asn Asn Pro Thr Thr Ser Pro Phe Gly Asn Pro Ile
        115                 120                 125

Pro Gly Leu Leu Asp Leu Gly Ala Gly Pro Asp Ala Ser Ala Ala Asn
    130                 135                 140

Ala Lys Leu Val Arg Leu Thr Glu Leu Pro Ser Gly Ser Pro Val Ala
145                 150                 155                 160

Val Val Val Arg Gln Leu Thr Glu His Val Asp Asp Ile Asp Leu Ile
                165                 170                 175

Thr Arg Leu Lys Asp Thr Gly Val Val Pro Asn Ala Arg Val Thr Val
            180                 185                 190

Glu Thr Ser Pro Ala Gly Asn Val Ile Ile Ile Ile Pro Gly His Glu
        195                 200                 205

Asn Val Thr Leu Pro His Glu Met Ala His Ala Val Lys Val Glu Lys
    210                 215                 220

Val
225


<210> 19
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<211> 230
<212> PRT
<213> Streptomyces lividans

<400> 19
Met Ser Gly Leu Ile Asp Thr Thr Glu Met Tyr Leu Arg Thr Ile Leu
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Glu Leu Glu Glu Glu Gly Val Val Pro Met Arg Ala Arg Ile Ala Glu
20 25 30

Arg Leu Asp Gln Ser Gly Pro Thr Val Ser Gln Thr Val Ala Arg Met
35 40 45

Glu Arg Asp Gly Leu Val Ser Val Ala Ala Asp Arg His Leu Glu Leu
50 55 60

Thr Asp Glu Gly Arg Arg Leu Ala Thr Arg Val Met Arg Lys His Arg
65 70 75 80

Leu Ala Glu Cys Leu Leu Val Asp Val Ile Gly Leu Glu Trp Glu Gln
85 90 95

Val His Ala Glu Ala Cys Arg Trp Glu His Val Met Ser Glu Ala Val
100 105 110

Glu Arg Arg Val Leu Glu Leu Leu Arg His Pro Thr Glu Ser Pro Tyr
115 120 125

Gly Asn Pro Ile Pro Gly Leu Glu Glu Leu Gly Glu Thr Asp Gly Ala
130 135 140

Asp Pro Phe Leu Asp Glu Gly Met Val Ser Leu Ala Asp Leu Asp Pro
145 150 155 160

Gly Gln Glu Gly Lys Thr Val Val Val Arg Arg Ile Gly Glu Pro Ile
165 170 175

Gln Thr Asp Ala Gln Leu Met Tyr Thr Leu Arg Arg Ala Gly Val Gln
180 185 190

Pro Gly Ser Val Val Ser Val Thr Glu Ser Ala Gly Gly Val Leu Val
195 200 205

Gly Ser Gly Gly Glu Ala Ala Glu Leu Glu Ala Asp Thr Ala Ser His
210 215 220

Val Phe Val Ala Lys Arg
225 230

<210> 20
<211> 215
<212> PRT
<213> Staphylococcus epidermidis

<400> 20
Met Leu Thr Glu Glu Lys Glu Asp Tyr Leu Lys Ala Ile Leu Thr Asn
1 5 10 15

Asp Gly Asp Val Ser Phe Val Ser Asn Lys Lys Leu Ser Gln Phe Leu
20 25 30

Asn Ile Lys Pro Pro Ser Val Ser Glu Met Val Gly Arg Leu Glu Lys
35 40 45

Glu Gly Tyr Val Glu Thr Lys His Tyr Lys Gly Ala Arg Leu Thr Glu
50 55 60

Glu Gly Leu Lys Gln Thr Leu Asp Ile Ile Lys Arg His Arg Leu Leu
65 70 75 80

Arg Leu Phe Leu Ile Glu Ile Leu Gln Tyr Asn Trp Glu Glu Val His
85 90 95

Gln Glu Ala Glu Ile Leu Glu His Arg Ile Ser Asp Leu Phe Val Glu
100 105 110

Arg Leu Asp Lys Ile Leu Asn Phe Pro Lys Thr Cys Pro His Gly Gly
115 120 125

Val Ile Pro Arg Gly Asn Ser Asp Ala Ala Ala Pro Gly Thr Ser Ile
130 135 140

Leu Asn Phe Glu Pro Gly Glu Arg Val Thr Val Arg Arg Val Arg Arg
145 150 155 160

Asp Lys Thr Glu Leu Leu Val Tyr Leu Ser Ser Lys Asp Ile Tyr Ile
165 170 175

Gly Asn Thr Val Glu Ile Val Ser Lys Asp Asp Thr Asn Lys Val Ile
180 185 190

Ile Leu Lys Arg Asn Asp Ile Val Thr Ile Leu Ser Tyr Glu Asn Ala
195 200 205

Met Asn Ile Phe Ala Glu Lys
210 215

<210> 21
<211> 213
<212> PRT
<213> Staphylococcus aureus

<400> 21
Met Leu Thr Glu Glu Lys Glu Asp Tyr Leu Lys Ala Ile Leu Thr Asn
1 5 10 15

Asn Gly Asp Lys Asn Phe Val Thr Asn Lys Ile Leu Ser Gln Phe Leu
20 25 30

```
Asn Ile Lys Pro Pro Ser Val Ser Glu Met Val Gly Arg Leu Glu Lys
        35                  40                  45

Ala Gly Tyr Val Glu Thr Lys Pro Tyr Lys Gly Val Arg Leu Thr Glu
    50                  55                  60

Asp Gly Leu Thr His Thr Leu Asp Ile Ile Arg His Arg Leu Leu Glu
65                  70                  75                  80

Leu Phe Leu Ile Glu Ile Leu Lys Tyr Asn Trp Glu Glu Val His Gln
                85                  90                  95

Glu Ala Glu Ile Leu Glu His Arg Ile Ser Asp Leu Phe Val Glu Arg
            100                 105                 110

Leu Asp Ser Leu Leu Asn Phe Pro Glu Thr Cys Pro His Gly Gly Val
        115                 120                 125

Ile Pro Arg Asn Asn Glu Tyr Lys Glu Lys Tyr Ile Thr Thr Ile Leu
    130                 135                 140

Asn Tyr Glu Pro Gly Asp Ile Val Thr Ile Lys Arg Val Arg Asp Lys
145                 150                 155                 160

Thr Asp Leu Leu Ile Tyr Leu Ser Ser Lys Asp Ile Ser Ile Gly Asn
                165                 170                 175

Glu Val Glu Ile Val Ser Lys Asp Glu Met Asn Lys Val Ile Ile Ile
            180                 185                 190

Lys Arg Asn Asp Asn Val Ile Ile Val Ser Tyr Glu Asn Ala Met Asn
        195                 200                 205

Met Phe Ala Glu Lys
    210
```

<210> 22
<211> 222
<212> PRT
<213> Enterococcus faecalis

<400> 22

```
Met Thr Pro Asn Arg Glu Asp Tyr Leu Lys Leu Ile Phe Glu Leu Gly
  1               5                  10                  15

Gly Asp Glu Val Lys Val Asn Asn Lys Gln Ile Val Ser Gly Leu Asp
            20                  25                  30

Val Ser Ala Ala Ser Val Ser Glu Met Ile Ser Lys Leu Val Lys Glu
        35                  40                  45

Asp Leu Val Glu His Ser Pro Tyr Gln Gly Val Gln Leu Thr Glu Lys
    50                  55                  60

Gly Leu Lys Lys Ala Ser Thr Leu Ile Arg Lys His Arg Ile Trp Glu
65                  70                  75                  80
```

```
Val Phe Leu Val Glu His Leu Asn Tyr Thr Trp Asn Asp Val His Glu
                85                  90                  95

Glu Ala Glu Val Leu Glu His Val Thr Ser Gln Thr Leu Val Asn Arg
            100                 105                 110

Leu Ala Asp Tyr Leu Asn His Pro Glu Phe Cys Pro His Gly Gly Val
        115                 120                 125

Ile Pro Glu Asp Asn Gln Pro Ile His Glu Glu Lys Arg Gln Thr Leu
    130                 135                 140

Thr Asp Tyr Pro Val Gly Thr Lys Ile Arg Ile Ala Arg Val Leu Asp
145                 150                 155                 160

Glu Lys Glu Leu Leu Asp Tyr Leu Val Ser Ile Asp Leu Asn Ile Gln
                165                 170                 175

Glu Glu Tyr Thr Ile Lys Glu Ile Ala Ala Tyr Glu Gly Pro Ile Thr
            180                 185                 190

Ile Tyr Asn Glu Asn Lys Glu Leu Ser Val Ser Phe Lys Ala Ala Asn
        195                 200                 205

Thr Ile Phe Val Glu Pro Leu Ile Arg Glu Ser Glu Glu Asn
    210                 215                 220
```

<210> 23
<211> 215
<212> PRT
<213> Streptococcus gordonii

<400> 23

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Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Leu Tyr Glu Leu Gly
  1               5                  10                  15

Thr Arg His Asn Lys Ile Thr Asn Lys Glu Ile Ala Gly Leu Met Gln
             20                  25                  30

Val Ser Pro Pro Ala Val Thr Glu Met Met Lys Lys Leu Leu Ala Glu
         35                  40                  45

Glu Leu Leu Ile Lys Asp Lys Lys Ala Gly Tyr Leu Leu Thr Asp Leu
     50                  55                  60

Gly Leu Lys Leu Val Ser Asp Leu Tyr Arg Lys His Arg Leu Ile Glu
 65                  70                  75                  80

Val Phe Leu Val His His Leu Gly Tyr Thr Thr Glu Glu Ile His Glu
                85                  90                  95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp His Phe Val Glu Arg
            100                 105                 110
```

```
Leu Asp Gln Leu Leu Asp Tyr Pro Lys Ala Cys Pro His Gly Gly Thr
        115                 120                 125

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Lys His Lys Leu Thr Leu
    130                 135                 140

Glu Glu Ala Lys Glu Lys Gly Asp Tyr Ile Leu Ala Arg Val His Asp
145                 150                 155                 160

Asn Phe Asp Leu Leu Thr Tyr Leu Glu Arg Asn Gly Leu Gln Val Gly
                165                 170                 175

Lys Thr Ile Arg Phe Leu Gly Tyr Asp Asp Phe Ser His Leu Tyr Ser
            180                 185                 190

Leu Glu Val Asp Gly Gln Glu Ile Gln Leu Ala Gln Pro Ile Ala Gln
        195                 200                 205

Gln Ile Tyr Val Glu Lys Ile
    210                 215
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<210> 24
<211> 217
<212> PRT
<213> Streptococcus mutans

<400> 24

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Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Ile Ile Tyr Glu Leu Ser
  1               5                  10                  15

Glu Arg Asp Glu Lys Ile Ser Asn Lys Gln Ile Ala Glu Lys Met Ser
             20                  25                  30

Val Ser Ala Pro Ala Val Ser Glu Met Val Lys Lys Leu Leu Leu Glu
         35                  40                  45

Asp Leu Val Leu Lys Asp Lys Gln Ala Gly Tyr Leu Leu Thr Lys Lys
     50                  55                  60

Gly Gln Ile Leu Ala Ser Ser Leu Tyr Arg Lys His Arg Leu Ile Glu
 65                  70                  75                  80

Val Phe Leu Met Asn His Leu Asn Tyr Thr Ala Asp Glu Ile His Glu
                 85                  90                  95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Val Phe Val Glu Arg
            100                 105                 110

Leu Asp Lys Phe Leu Asn Tyr Pro Lys Val Cys Pro His Gly Gly Thr
        115                 120                 125

Ile Pro Gly His Gly Gln Pro Leu Val Glu Arg Tyr Arg Thr Thr Leu
    130                 135                 140

Lys Gly Val Thr Glu Met Gly Val Tyr Leu Leu Lys Arg Val Gln Asp
145                 150                 155                 160
```

```
Asn Phe Gln Leu Leu Lys Tyr Met Glu Gln His His Leu Lys Ile Gly
                165                 170                 175

Asp Glu Leu Arg Leu Leu Glu Tyr Asp Ala Phe Ala Gly Ala Tyr Thr
            180                 185                 190

Ile Glu Lys Asp Gly Glu Gln Leu Gln Val Thr Ser Ala Val Ala Ser
        195                 200                 205

Gln Ile Tyr Ile Glu Lys Lys Ala Tyr
    210                 215
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<210> 25
<211> 216
<212> PRT
<213> Streptococcus pneumoniae

<400> 25

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Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Ile Tyr Glu Ile Gly
  1               5                  10                  15

Ile Asp Leu His Lys Ile Thr Asn Lys Glu Ile Ala Ala Arg Met Gln
            20                  25                  30

Val Ser Pro Pro Ala Val Thr Glu Met Ile Lys Arg Met Lys Ser Glu
        35                  40                  45

Asn Leu Ile Leu Lys Asp Lys Glu Cys Gly Tyr Leu Leu Thr Asp Leu
    50                  55                  60

Gly Leu Lys Leu Val Ser Glu Leu Tyr Arg Lys His Arg Leu Ile Glu
65                  70                  75                  80

Val Phe Leu Val His His Leu Asp Tyr Thr Ser Asp Gln Ile His Glu
                85                  90                  95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Leu Phe Val Glu Arg
            100                 105                 110

Leu Asp Lys Leu Leu Gly Phe Pro Lys Thr Cys Pro His Gly Gly Thr
        115                 120                 125

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Ile Asn Asn Leu Pro Leu
    130                 135                 140

Ala Asp Ile Lys Glu Ala Gly Ala Tyr Arg Leu Thr Arg Val His Asp
145                 150                 155                 160

Ser Phe Asp Ile Leu His Tyr Leu Asp Lys His Ser Leu His Ile Gly
                165                 170                 175

Asp Gln Leu Gln Val Lys Gln Phe Asp Gly Phe Ser Asn Thr Phe Thr
            180                 185                 190
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```
Ile Leu Ser Asn Asp Glu Asp Leu Gln Val Asn Met Asp Ile Ala Lys
        195                 200                 205

Gln Leu Tyr Val Glu Lys Ile Asn
    210                 215


<210> 26
<211> 216
<212> PRT
<213> Streptococcus pyogenes

<400> 26
Met Thr Pro Asn Lys Glu Asp Tyr Leu Lys Cys Ile Tyr Glu Ile Gly
  1               5                  10                  15

Ile Asp Leu His Lys Ile Thr Asn Lys Glu Ile Ala Ala Arg Met Gln
             20                  25                  30

Val Ser Pro Pro Ala Val Thr Glu Met Ile Lys Arg Met Lys Ser Glu
         35                  40                  45

Asn Leu Ile Leu Lys Asp Lys Glu Cys Gly Tyr Leu Leu Thr Asp Leu
     50                  55                  60

Gly Leu Lys Leu Val Ser Glu Leu Tyr Arg Lys His Arg Leu Ile Glu
 65                  70                  75                  80

Val Phe Leu Val His His Leu Asp Tyr Thr Ser Asp Gln Ile His Glu
                 85                  90                  95

Glu Ala Glu Val Leu Glu His Thr Val Ser Asp Leu Phe Val Glu Arg
            100                 105                 110

Leu Asp Lys Leu Leu Gly Phe Pro Lys Thr Cys Pro His Gly Gly Thr
        115                 120                 125

Ile Pro Ala Lys Gly Glu Leu Leu Val Glu Ile Asn Asn Leu Pro Leu
    130                 135                 140

Ala Asp Ile Lys Glu Ala Gly Ala Tyr Arg Leu Thr Arg Val His Asp
145                 150                 155                 160

Ser Phe Asp Ile Leu His Tyr Leu Asp Lys His Ser Leu His Ile Gly
                165                 170                 175

Asp Gln Leu Gln Val Lys Gln Phe Asp Gly Phe Ser Asn Thr Phe Thr
            180                 185                 190

Ile Leu Ser Asn Asp Glu Asp Leu Gln Val Asn Met Asp Ile Ala Lys
        195                 200                 205

Gln Leu Tyr Val Glu Lys Ile Asn
    210                 215
```

<210> 27
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Consensus sequence

<400> 27
gtaggttagg ctaacctat 19

<210> 28
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Consensus sequence

<400> 28
ttaggttagg ctaacctaa 19

<210> 29
<211> 19
<212> DNA
<213> Cornyebacterium diptheriae

<400> 29
ttaggatagc tttacctaa 19

<210> 30
<211> 19
<212> DNA
<213> Streptomyces pilosus

<400> 30
ttaggttagg ctcacctaa 19

<210> 31
<211> 19
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: 16S ribosomal RNA

<400> 31
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<210> 32
<211> 19
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: 19 kDa antigen

<400> 32
gcaggccagt gaaacctgt 19

<210> 33
<211> 20
<212> DNA
<213> Unknown Organism

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<223> Description of Unknown Organism: htrA homologue

<400> 33
acaggtggtg ctcaaccacg 20

<210> 34
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<212> DNA
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<220>
<223> Description of Unknown Organism: phoP homologue

<400> 34
gaaggtaacg ttcaaccaat 20

<210> 35
<211> 20
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: adhB homologue

<400> 35
gcaggtgacc gtcaaccgat 20

<210> 36
<211> 19
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: narG homologue

<400> 36
gaaggtcaac caaacaaga 19